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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/538,769

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Philip Nigel Bartlett

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EXAMINER

MENDEZ, ZULMARIAM

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

11/07/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/538,769	Applicant(s) BARTLETT ET AL.	
	Examiner ZULMARIAM MENDEZ	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/03/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 1 and 11 are objected to because of the following informalities: the cross-sectional area has been expressed in meters, instead of in its corresponding units of area (e.g., m²). For examination purposes, the examiner has considered the limitation "...cross section in the order of 10⁻⁹ to 10⁻⁸ m" as "...cross section in the order of 10⁻⁹ to 10⁻⁸ m²". Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartlett (WO 99/00536) in view of Attard et al. (US Patent no. 6,203,925).

With regard to claims 1 and 11, Bartlett discloses porous films and membranes to be used as anode (positive electrode) or cathode (negative electrode) and solid electrolytes in electrochemical devices and sensors (page 3, lines 3-5; page 16, lines 1-6) wherein said positive electrode comprises a mesoporous structure having a periodic arrangement of substantially uniformly sized pores (page 7, lines 5-7). Bartlett fails to teach wherein the pores have a cross-section in the order of 10^{-9} to 10^{-8} m².

Furthermore,

- $A_{c.s} = \pi r^2 = 4\pi d^2$; therefore,
- $d = \sqrt{\frac{A_{c.s}}{4\pi}}$
- For $A_{c.s} = 10^{-9}$ m², $d = 8.92$ μm
- For $A_{c.s} = 10^{-8}$ m², $d = 28$ μm

Even though Bartlett does not disclose a diameter in the range between 8.92 μm and 28 μm, Bartlett does disclose wherein the pore size can be varied by altering the hydrocarbon chain length of the surfactant used as structure-directing agent or by supplementing the surfactant by a hydrocarbon additive (page 10, lines 9-28) in order to obtain high specific surface areas, high double layer capacitances and provide a low effective series resistance to electrolyte diffusion as well as to exhibit greater mechanical, electrochemical, chemical and thermal durability (page 15, lines 22-26). This teaching is also exemplified by Attard who discloses porous metal-based materials having a substantially regular structure and uniform pore size (col. 1, lines 4-8) wherein the porous metal-based materials have particle diameter size from 90 nm to 2mm (.09μm to 2000 μm) in order to obtain high specific surface areas, high double layer

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capacitances and provide a low effective series resistance to electrolyte diffusion as well as to exhibit greater mechanical, electrochemical, chemical and thermal durability (col. 5, lines 59-65). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the diameter pore size of Bartlett, as exemplified by Attard, in order to obtain high specific surface areas, high double layer capacitances and provide a low effective series resistance to electrolyte diffusion as well as to exhibit greater mechanical, electrochemical, chemical and thermal durability.

With regard to claims 2-5, 15 and 22, Bartlett discloses wherein the mesoporous structure of the positive electrode is a metal, such as nickel or nickel alloys (page 4, lines 15-18), a metal oxide or hydroxide (page 4, lines 13-23; page 12, lines 17-31) wherein said metal oxide, such as Nickel oxide (page 5, lines 9-13; page 12, lines 20-32) forms a surface layer over said metal and extending over at least the pore surfaces (page 4, lines 22-23; page 5, lines 18-20).

With regard to claims 6 and 18, Bartlett further discloses wherein the mesoporous structure has a pore diameter in the range of about 1 to 10 nm (page 10, lines 24-26).

With regard to claims 7 and 19, Bartlett teaches wherein the mesoporous structure has a pore number density of about 4×10^{11} to 3×10^{13} pores per cm^2 (page 10, lines 28-30).

With regard to claims 8 and 20-21, Bartlett teaches wherein at least 75% of the pores in said mesoporous structure have pore diameters within 30%, of the average pore diameter, more preferably within 10%, and most preferably 5% of average pore

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diameter (page 11, lines 1-4).

With regard to claims 9 and 10, Bartlett discloses wherein the mesoporous structure has a hexagonal arrangement of pores that are continuous through the thickness of the electrode (page 6, lines 29-31; se figure 1) having a pore periodicity of 60 Å (6nm).

With regard to claim 12, Bartlett teaches wherein said mesoporous structure is a film having a thickness in the range of about 100 Å to about 20 micrometers (page 9, lines 5-7).

With regard to claims 13, 14 and 16, Bartlett discloses wherein said negative electrode comprises a material such as carbon, nanoparticulate carbon, cadmium or palladium (page 12, lines 20-32; page 10, lines 1-2).

With regard to claim 17, Bartlett further teaches wherein said cell is constructed to function as a battery (page 16, lines 1-14).

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ZULMARIAM MENDEZ whose telephone number is (571)272-9805. The examiner can normally be reached on Monday-Thursday, 8:30am-5:00pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Z. M./

Examiner, Art Unit 1795

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795